Carota Blogpost

Goals

It's another long cold winter's day for Stephanie. After a few days of craziness at work she's on her way back home from the chaos. Her stomach begins to growl at her and it has a legitimate point. She's been neglecting the poor thing all day. Steph finally arrives home after what seems like an eternity on the road. Opening the fridge door doesn't make her day any better. Her vegetables have gone bad. "It's alright" she thinks to herself. "I'll just make a simple sandwich". There's no way she's leaving the heat and comfort of her home now. And just when Stephanie thought she had it all worked out she opens the bag of bread to the stench of mold. This is not Steph's day. Exasperated, she resigns the idea of cooking and dials the local pizza joint. Stephanie, taking a bite into the greasy pizza that will leave her regretting her decision soon enough, thinks to herself that there's got to be an app for this.

We all get busy. Keeping ingredients on hand and planning meals is hard. It requires keeping a stocked cupboard and fridge. It also requires having the right ingredients in the right quantities so that there isn't that pesky leftover pepper or carrot that ends up rotting in the fridge because you didn't have anything to do with it. And what about when you want to make your favourite dish but are just missing that one ingredient that brings it all together?

Another problem that we face on a day to day basis is deciding what to prepare and eat, if there is a way to automatically suggest recipes based on the ingredients in hand, it would make sure that the ingredients in hand do not get spoilt and go to the green bin. Wouldn't it be awesome if an app suggested what to cook and helped you avoid food waste at the same time? That is Carota for you.

According to the [2017 National Zero Waste Council research](#), about 140 kilograms of food are wasted each year because it spoils. This equates to around $1,100 per year wasted on rotting food. To put this in perspective, that's about 1.2 million tomatoes being wasted in a single day!

Carota aims to optimize ingredient usage. This means easier, cheaper, healthier cooking and less food waste.

Stephanie is just one persona that struggles with being able to cook every day. But almost everyone who gets busy or lazy once in a while suffers the same problem. We used personas and empathy maps to better understand some of our potential users.

Here's one we generated for a busy student, Clarence Butcher:

DESIGNLAB

PERSONA DEVELOPMENT

Add a photo for your persona, or sketch a cartoon version instead :-)

Clarence Butcher

Add a name for your persona here.

Create a quote to identify with this persona. The quote should sum up their worldview, rather than expressing detailed product preferences.

PERSONA BIO
Write your persona's background story here.

Born outside Waterloo region, was healthy & active in highschool but has lost his way after coming to University. Since becoming independent, has struggled with finding healthy options on campus. Clarence is too busy/ lazy to go out and find healthy foods. Clarence is financially supported by his parents, has a student budget.

AGE — 19-23
OCCUPATION — Student
STATUS — Unemployed
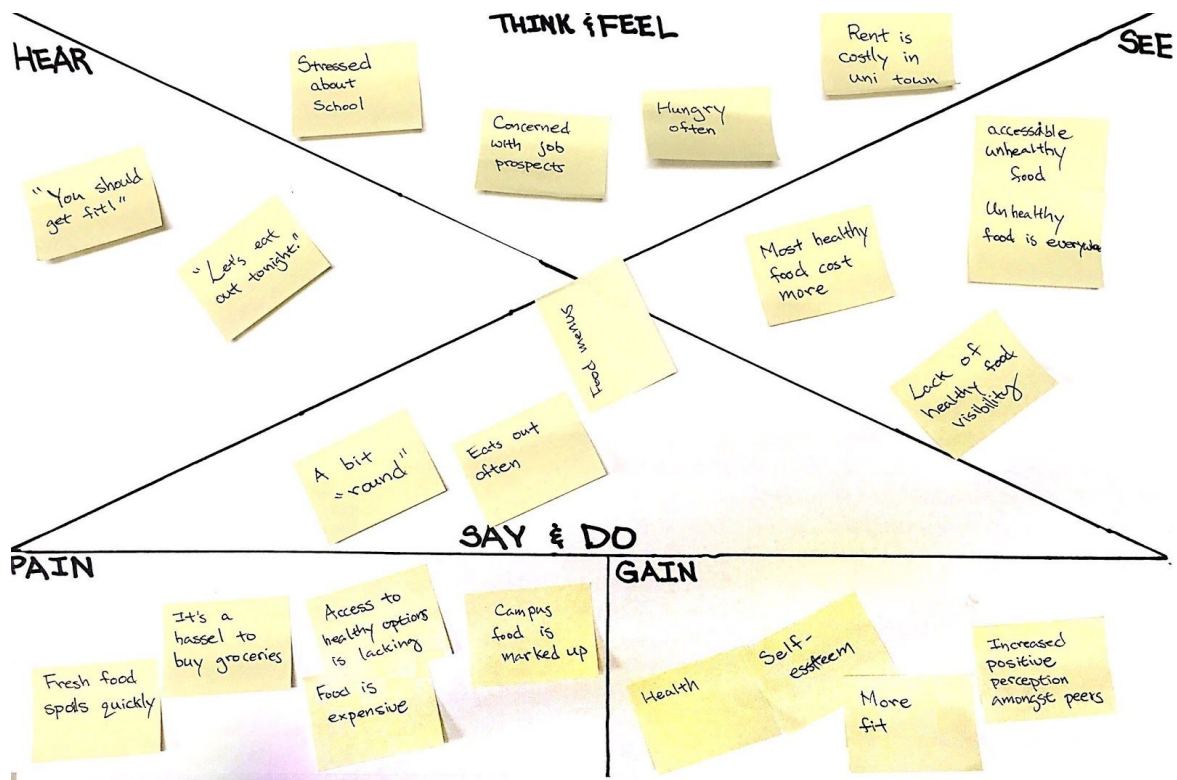LOCATION — Waterloo
GENDER — Male
STATUS —

GOALS & NEEDS
• Save money
• Eat healthy
• Lazy

FRUSTRATIONS / FEARS
• Cooking/shopping takes too long
• Food costs too much
• Unhealthy diet

PERSONALITY
Mark where this persona fits in the Myers-Briggs personality types.
https://en.wikipedia.org/wiki/Myers%E2%80%93Briggs_Type_Indicator#/media/File:MyersBriggsTypes.png

Extrovert   Introvert   Thinking   Feeling

Sensing   Intuition   Judging   Perceiving

THINK & FEEL

HEAR

SEE

Stressed about School

Rent is costly in uni town

Concerned with job prospects

Hungry often

accessible unhealthy food

Unhealthy food is everywhere

"You should get fit!"

Most healthy food cost more

"Let's eat out tonight."

Food menus

Lack of food healthy visibility

A bit "round"

Eats out often

SAY & DO

PAIN

GAIN

It's a hassel to buy groceries

Access to healthy options is lacking

Campus food is marked up

Increased positive perception amongst peers

Fresh food spoils quickly

Food is expensive

Health

Self-esteem

More fit

By creating Clarence Butcher we were able to better personally identify with his circumstances. The empathy map helped us get into the head of Clarence and what he might be thinking. Ultimately, the persona and empathy map allowed us to view the problems faced in a particular circumstance which enabled us to brainstorm potential solutions to the problem for not just Clarence, but for our targeted audience in general.

Personas and empathy maps were great but they aren't the real thing. Next, we got to interviewing. We first interviewed those around us: fellow students and young adults having recently entered the workforce. A total of 6 interviews were conducted with the average age of early to mid-twenties. This made sense for us since these were time-limited individuals with busy schedules, thus our target demographic.

We led off our interviews with some ice-breaking questions like what the subject's favourite foods to eat were and why. We also questioned about foods that are popular in their culture. These ice-breakers worked well in getting the subject thinking about their diet and food.
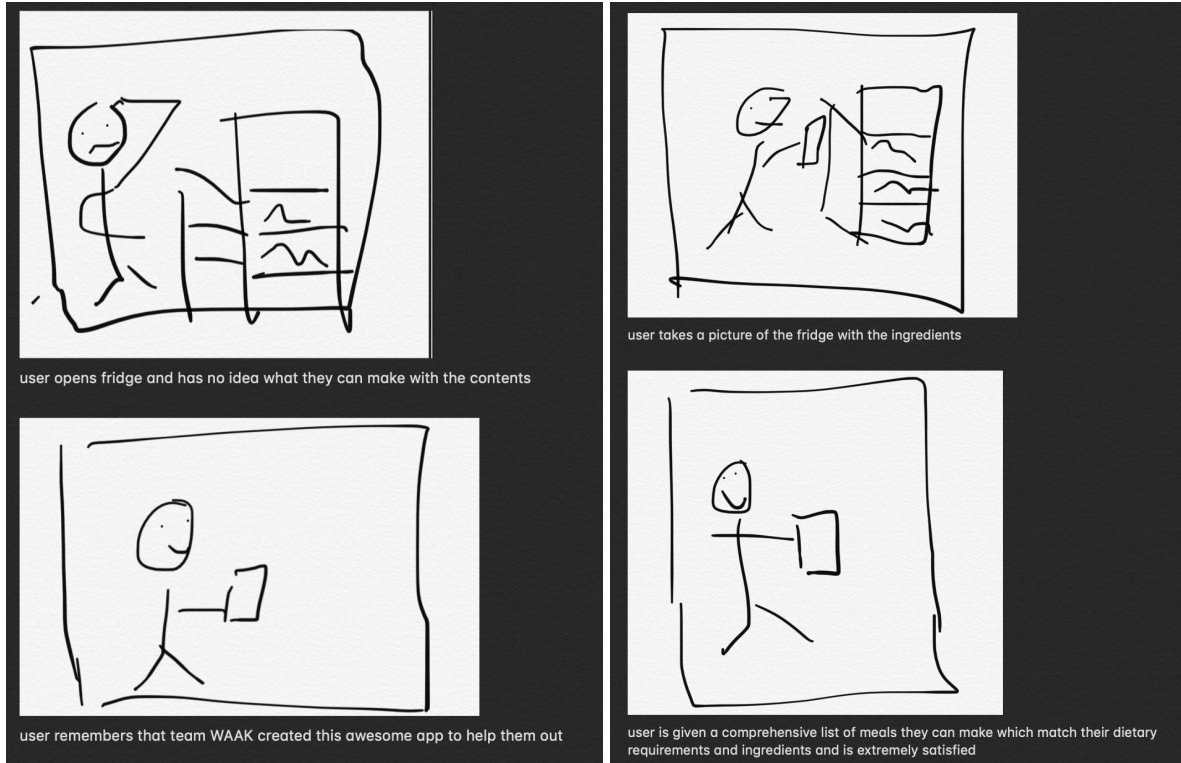
Our interviews mainly focused around the subject's eating patterns and diet. We wanted to find out how often the subjects were eating out vs cooking their own food and why. We also wanted to know what subjects thought about their own diets.

What we discovered through our interviews was that, like we had suspected, students and young professional adults often eat out and are not content with their diet. One key theme we picked up throughout our interviews was that most would be glad to give away food they are not able to consume before spoilage if given a tool to do so. This is a goal we will end up focusing on as we move through our iterations.

With the initial set of personas, empathy maps and interviews complete we moved on to creating storyboards of scenarios that our subjects and targeted users might find themselves in.

This storyboard outlines the app feature we came up with for sharing leftover foods. This was inspired by the dissatisfaction our interview subjects had with having their food spoil.

user opens fridge and has no idea what they can make with the contents

user takes a picture of the fridge with the ingredients

user remembers that team WAAK created this awesome app to help them out

user is given a comprehensive list of meals they can make which match their dietary requirements and ingredients and is extremely satisfied

Another feature we came up with based on our own experiences as well as interview feedback: a recipe suggester based upon the scanning of current food on hand to the user. This feature would help make cooking more accessible to users by offering easy to make meals based off of the scanned ingredients that perhaps the user would not have thought of.

From the interviews we identified the following problems and attempted to address them with the corresponding features:

Problem 1: Access to local, fresh food is difficult.

Feature 1.1: Delivery of fresh food from farmers to users.
Sort of like Uber eats for fresh local foods.

Feature 1.2: Discovery feature for fresh and local foods in the user's area.

Problem 2: Food surplus/shortage
We found that our subjects were deterred from cooking because they found that with their busy schedules that food would often go bad before it could be used. Subjects felt bad that their food would expire on both a moral as well as a financial basis.

Feature 2.1: Ingredient exchange for surplus or shortage of ingredients.

This would include a transfer functionality as well as a discovery feature to find required ingredients.

This feature would include a profile system with ratings for trust in picking up ingredients from strangers. It would also include an in-app currency feature for exchanging ingredients which would reward the user for their participation.

Problem 3: Ingredient tracking/management is hard.
Feature 3.1: Pantry/fridge ingredient tracking.
This would work by scanning receipts or food itself with the user's camera to enter it into the app.

Feature 3.2: Meal suggestions based off of ingredients.
With knowledge of the user's ingredients, meal suggestions could be made. Suggestions could be based off of optimal ingredient usage (to prevent surplus) as well as other factors like prep time, difficulty and nutrition.

Problem 4: Discontent with diet
Many of our subjects felt dissatisfaction with their present diets.

Feature 4.1: Sharing of meals and meal ideas with other users or friends.
This feature would encourage users to eat healthier with a form of peer pressure.
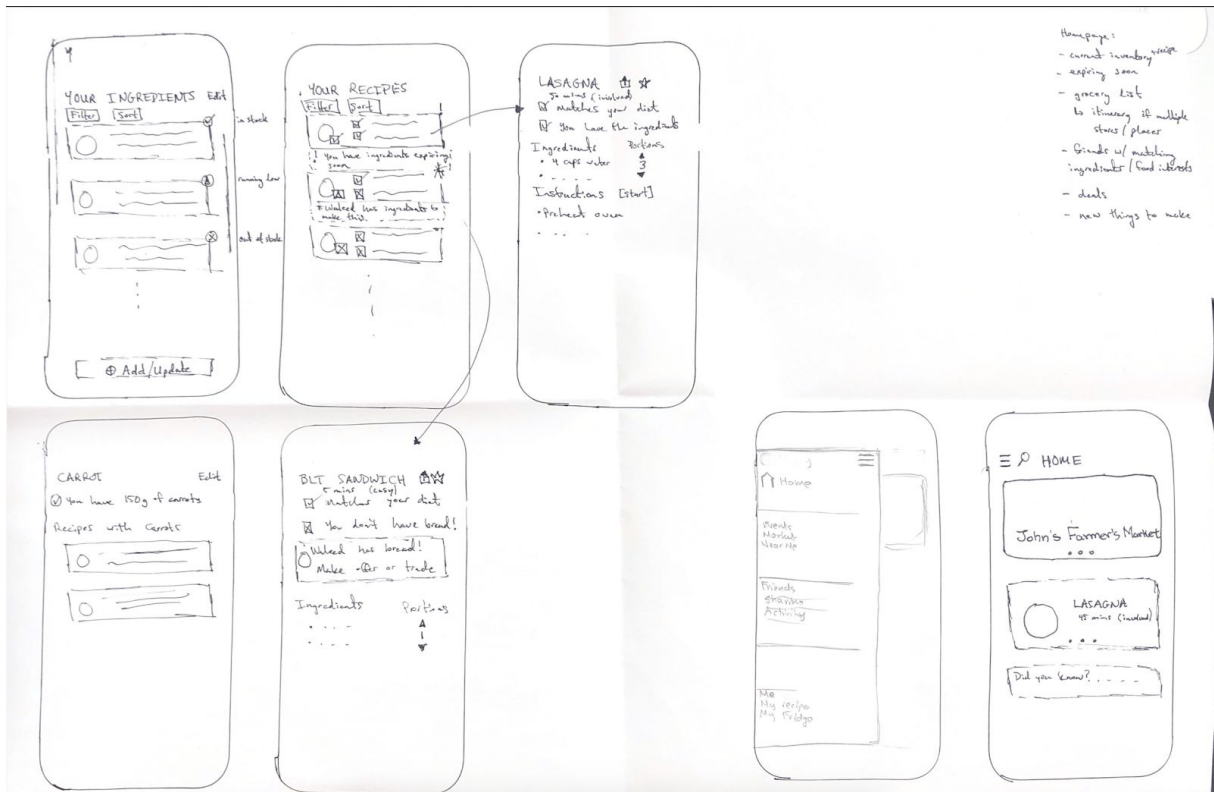
Feature 4.2: Food/meal nutrition information.
The app would provide nutrition information on the meals/diet of the user.

From these features we ambitiously decided to pick features 1.2, 2.1, 3.1 and 3.2 from the above to begin experimenting with in a paper prototype.
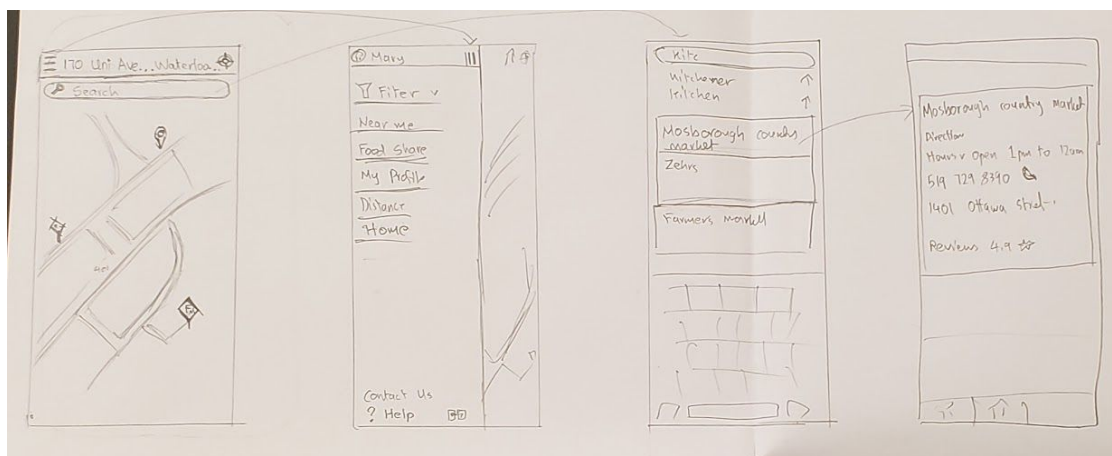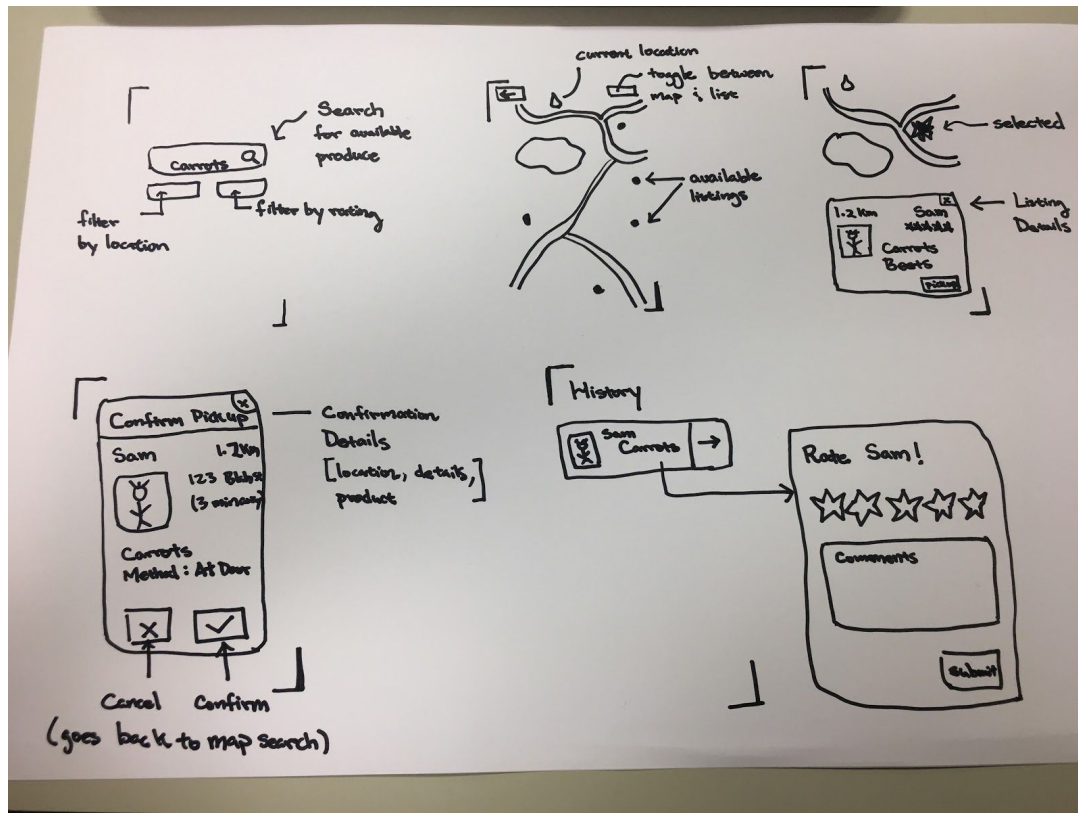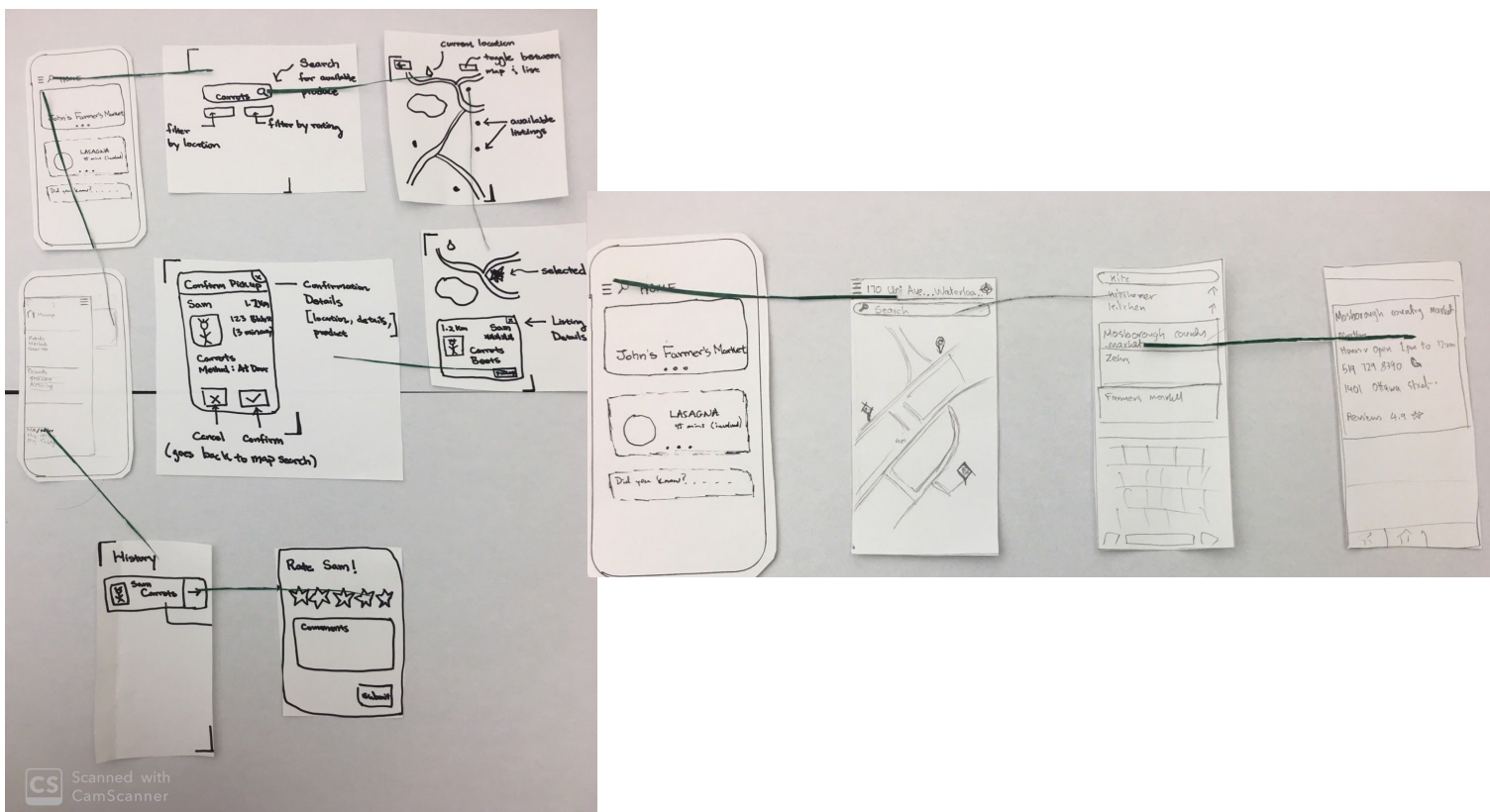
The map discovery and sharing feature.

The ingredient tracking and recipe features

With a rough go of the features in place, we then tried to figure out how to combine them by creating a user flow. The user flow is meant to visualize how the user can navigate the app and its features.

With this really rough on-paper model in place, it was time to flush it out a bit. We went through the various features of the app and added some depth by "implementing" some of the features. We created buttons, states and popups to emulate a functional application.
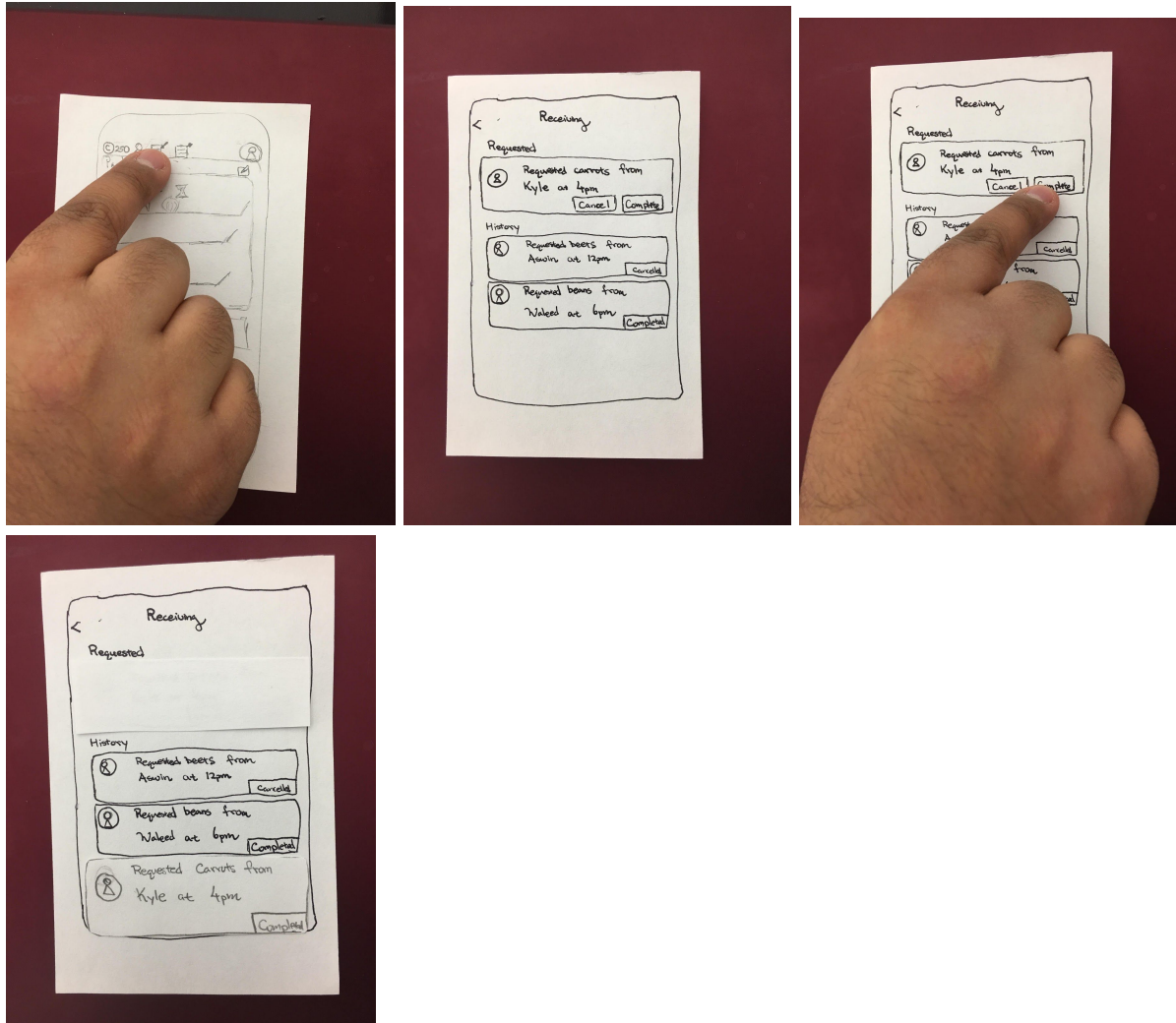
Using the receiving feature, emulating a pick-up of food.
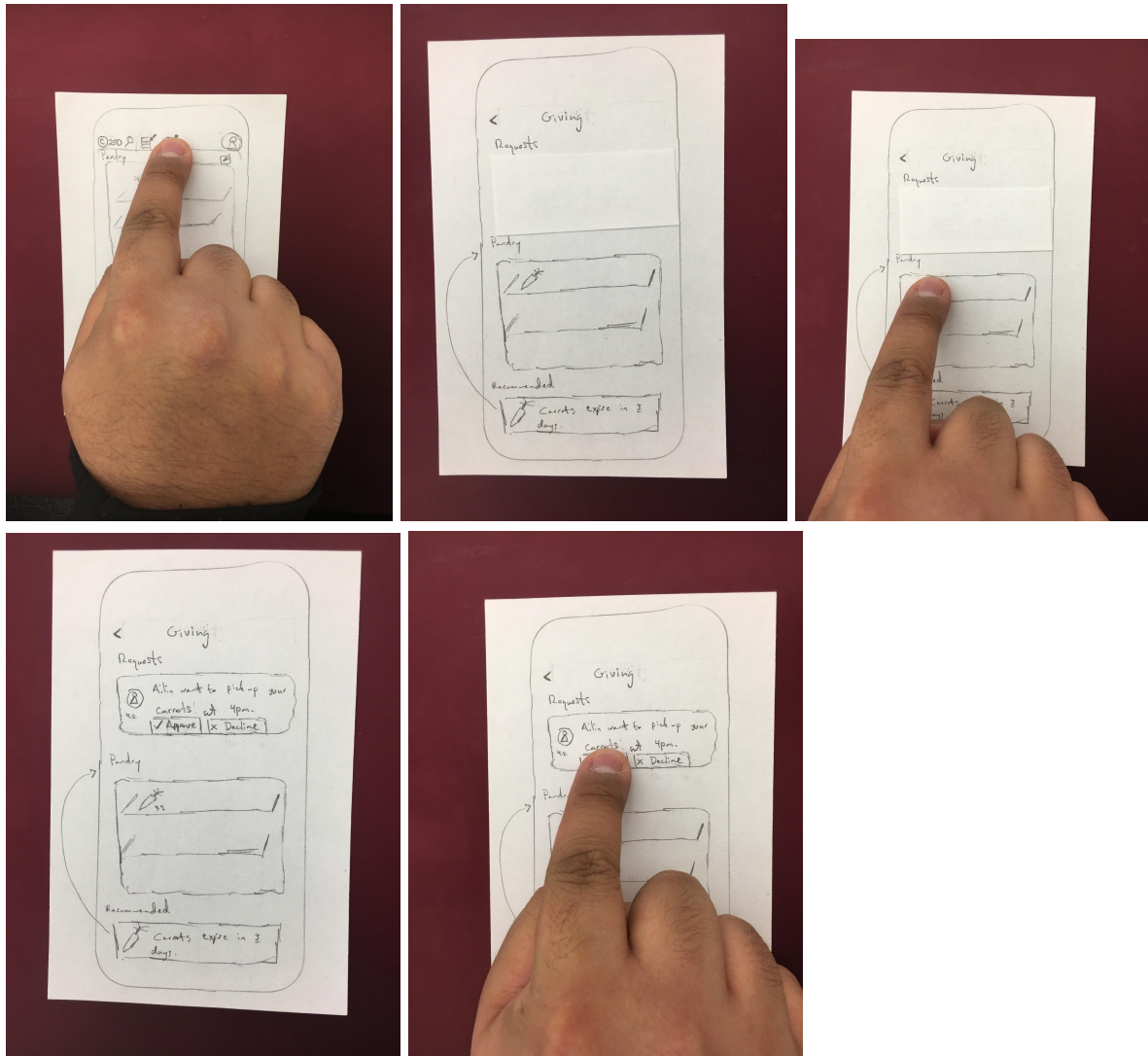
Using the giving feature in which a user gives away an item in their pantry. Another user requests to pick it up and the user accepts their request.
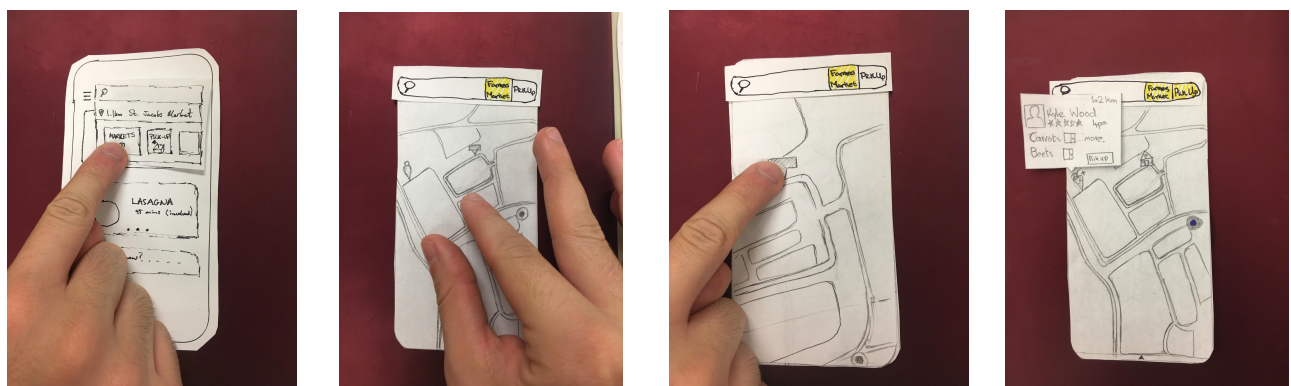

Using the discovery feature to find someone with a desired ingredient.

After roughly prototyping our app into paper form, the next reasonable step was to get more subjects to interact with it and give us feedback.

We had the subjects test the various features of our app in separate attempts.

First we had them try to use the sharing portion of the app where they would have to give away some food from the pantry in the app.

Right away it was demonstrated that our navigation was not clear.
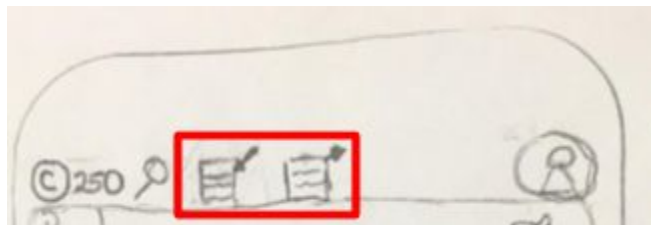
The navigation icons to the giving and receiving parts of the apps were not intuitive to our subjects. A subject also felt as though it took too many steps to share an item.

Next we had the subjects update their in-app pantry. This feature was pretty straightforward and was generally liked by our subjects.

Next, the subjects had to use the discovery portion of the app to find local farmer's markets or ingredients. The main issue had for this feature was that the markers were not intuitive to the subjects. The marker identifying farmer's markets was not at all clear and caused a great deal of confusion for our subjects.

Finally, we had the subjects evaluate the ingredient tracking portion of the app. This was done well as the subjects were able to identify expiring ingredients with ease.

Our paper prototype evaluations granted us good insight into areas in which our app could be improved. We set out to improve on the features outlined by the evaluation as well as problems we identified ourselves.

First we did away with the hamburger menu. A recurring problem we had in the paper evaluations was navigation. We had forgotten to include back buttons on a number of pages and also found that the hamburger menu was clunky. We decided to do away with both the back button and the hamburger menu. Instead, they would be replaced with a single, clean navbar.
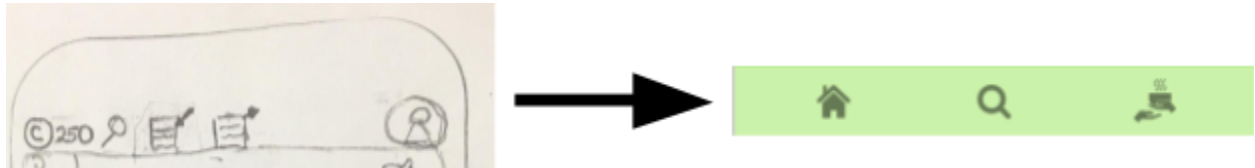
We also moved it to the bottom since the navbar being at the top was a pain to reach!

We changed the share and pick up from being separate navbar icons to being a toggleable tab-based view.
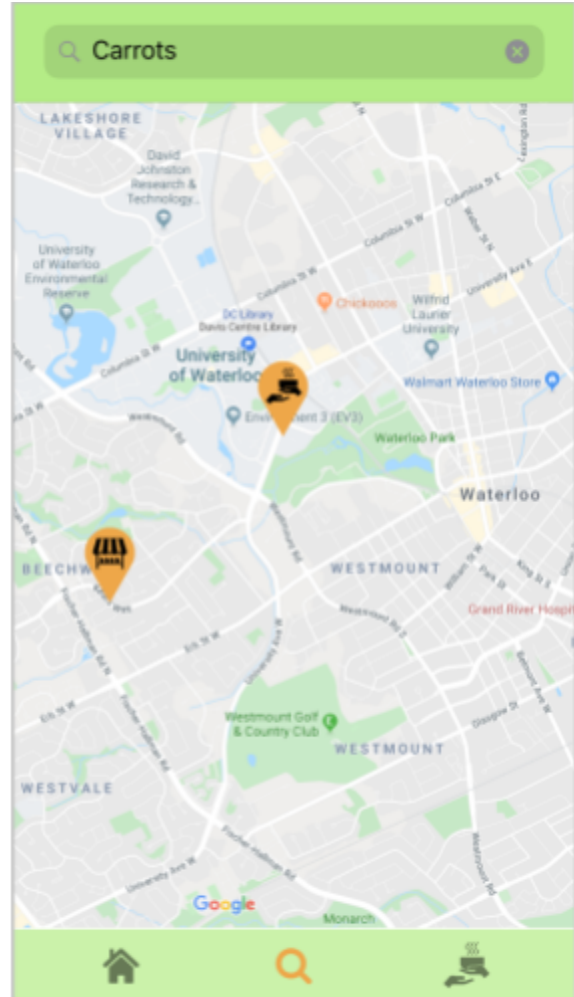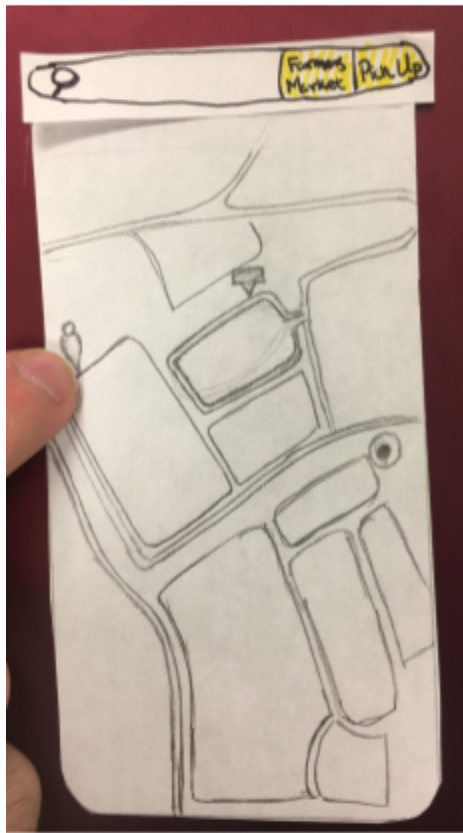
We fixed our map markers by providing a more descriptive icon in the markers.

With these changes in place into a higher fidelity prototype, it was time again to get some subjects to take another look.

To evaluate our high fidelity prototype, we formulated a set of 3 goals we felt that strongly aligned with what we intended to accomplish with this set of evaluations

1. Determine how intuitive it is to use Carota at this present stage
2. Reduce number of steps users take to accomplish tasks
3. Determine level of usefulness and real life relevance

For our heuristic evaluation 5 heuristics were chosen in accordance to our goals. A consistent and minimalistic design would aid in our users being able to intuitively navigate our app.

Success in the recognition rather than recall aspect will reduce steps to accomplish in app tasks. And finally, real world usefulness is a measure of whether our app will improve our users' life.

1. Aesthetics and minimalist design
2. Recognition rather than recall
3. Match between system and real world
4. Visibility and system status
5. Consistency and standards

During the heuristic evaluation we tasked our participants with the following:

Task 1: Add groceries to pantry using the scan receipt feature
Task 2: Give away expiring food
Task 3: Find/request desired food
Task 4: View recipes to make with current pantry contents
Task 5: Find giving and receiving food pages

Overall our participants found the design to be pleasant and the colour palette to relate to food. All participants thought the light green of the base should be used on all backgrounds of the app. The word "Share" was identified as not clear as it was not explicitly clear what was to be done. One participant suggested an addition of the word "your" to a few key phrases, such as "Your Pantry" which we felt would be useful connect Carota with our users more. Both thought that Carota's intentions matched with their expectations in real life uses.

Next, cognitive evaluations were conducted on the same tasks. This time we recorded how the user navigated the app, which actions they performed, as well as issues they encountered. The participants found the tasks to be largely intuitive and performed them without issue. One participant thought the map feature could be more info about the pick up encounter before confirmation. The icon for scanning receipts was noted as mildly confusing as there is a pencil and not the usual scan icon usually seen on other applications.

We sought to implement the insights we gained from these evaluations. Map feature was improved by including more information and adding the confirm button to the base of the page rather than having a pop-up. This reduced steps to accomplish tasks related to picking up food found through this feature. Fonts were readjusted, increasing readability and overall aesthetics of the app. The scan icon within the pantry was changed to the commonly seen scan icon to improve ease of navigation and enhance our "recognition rather than recall" goal.

Reflecting back, Carota and indeed CS449 was a great learning experience. We feel as though we developed an app that we and many of our subjects felt would be used and beneficial in day-to-day life. While we pivoted between a variety of ideas, that is the nature of the design process.

If we were given the opportunity to do this project over again we would certainly have narrowed down our feature list initially. Despite having a number of really great and interesting features, we found it immensely difficult having to test, design and prototype many features concurrently. Having many features also raised the challenge of having to figure out how to navigate and have the varying features interact added another layer of complexity to the design process. By having a slimmer featureset we would have been able to iterate much quicker and with greater agility.

We want to thank the course staff of CS449 for providing a great learning opportunity in which we have each benefited greatly. The ideas of the design process are applicable in many facets of the software development world in which we are all entering and we're sure that we will be better professionals wherever we end up because of the knowledge we have gained from this course.